Sustainable Development Initiatives in the University Libraries in Karnataka: An Evaluative Study

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1. Introduction

The concept of sustainability has evolved significantly over time, illustrated by historical concerns about resource limitations and population growth, as first proposed by Thomas Malthus in 1798. The term gained prominence in the mid-20th century, notably through Joseph L. Fisher's early usage in 1953 to describe the long-term availability of natural resources (Fisher, 1953). However, it was the Brundtland Report (1987) that provided the modern and widely accepted definition of sustainable development-"development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987). This definition laid the foundation for what is now considered a multidimensional framework encompassing environmental protection, economic viability, and social equity—collectively known as the "triple bottom line" (Elkington, 1997).

To address growing global concerns—ranging from poverty and inequality to climate change and environmental deprivation—the United Nations (UN) launched the 2030 Agenda for Sustainable Development. This framework includes 17 Sustainable Development Goals (SDGs) that serve as a universal call to action for governments, organizations, and civil society (United Nations, 2015). These goals build upon prior global initiatives like Agenda 21 (1992), the Millennium Development Goals (2000–2015), and the Rio+20 Conference (2012), promoting a holistic approach toward sustainable and inclusive global transformation.

In India, the government has aligned national and subnational policies with the SDGs through frameworks such as the National Action Plan on Climate Change (NAPCC) and State Action Plans on Climate Change (SAPCCs). These frameworks are supported by sectoral programs like the Smart Cities Mission, AMRUT, Swachh Bharat Mission (Urban), and the National Clean Air Programme (NCAP), particularly targeting SDG 11: Sustainable Cities and Communities (NITI Aayog, 2020; MoEFCC, 2022). Within this broader context, the academic and information services sector, particularly university libraries, plays a critical yet often underrecognized role in promoting sustainability. Libraries are vital for achieving SDG 4 (Quality Education) through equitable access to knowledge; SDG 9 (Innovation and Infrastructure) through digital and green technologies; and SDG 10 (Reduced Inequalities) by fostering inclusive services (IFLA, 2018). As knowledge hubs, university libraries facilitate lifelong learning, digital inclusion, and environmental literacy, all essential for informed public participation and sustainable community development.

The integration of sustainability into the Library and Information Science (LIS) discipline gained momentum with landmark initiatives like the Talloires Declaration (1990) and the IFLA Green Library Movement, which emphasized the environmental responsibilities of libraries (Antonelli, 2008). Scholars such as Amanda Spink (2005) and Elepov & Lavrik (2006) further advocated for the field's active involvement in achieving sustainability by leveraging libraries' cultural and social influence to support sustainable practices and innovation.

In Karnataka, several university libraries have started incorporating sustainability-oriented strategies, such as digitizing resources, implementing energy-efficient infrastructure, and providing inclusive services. However, a gap exists in systematically evaluating these initiatives and their contributions to the broader SDG framework. According to Singh (2024) from the Foundation for Development Initiatives (FDI), localized, participatory, and community-driven Sustainable Development Initiatives (SDIs) are crucial in achieving long-lasting social and environmental outcomes. FDI's work in domains such as renewable energy, sustainable agriculture, and gender empowerment underlines the critical role of grassroots-level sustainability planning and execution. Against this backdrop, the present study, titled "Sustainable Development Initiatives in the University Libraries in Karnataka: An Evaluative Study," aims to explore and critically assess how university libraries in Karnataka contribute to sustainable development. It will analyse existing policies, practices, and infrastructural developments in these libraries about the SDGs and provide recommendations for enhancing their role as sustainability enablers in higher education institutions.

2. Definition and Meaning of Sustainable Development

The concept of **sustainable development** has evolved significantly over time, encompassing economic, social, environmental, and cultural dimensions. It gained fame in global discourse with the publication of the **Brundtland Report**, officially known as *Our Common Future*, by the **World Commission on Environment and Development (WCED)** in 1987. The report defines sustainable development as: **"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."** (WCED, 1987). This definition emphasizes the principle of **intergenerational equity**, urging present societies to manage resources responsibly to preserve opportunities and well-being for future generations. It also underscores the interdependence of environmental

protection, economic growth, and social well-being. Sustainable development is often conceptualized using the **"three-pillar"** or **"triple bottom line"** model, which includes:

1. **Environmental sustainability** – Protection of ecosystems and biodiversity;
2. **Economic sustainability** – Long-term economic growth without adverse effects on social or environmental systems;
3. **Social sustainability** – Equity, social justice, cultural vitality, and inclusion (Elkington, 1997).

The **United Nations (2015)** further elaborated on this idea by adopting the **2030 Agenda for Sustainable Development**, which includes **17 Sustainable Development Goals (SDGs)** and 169 targets. These goals are intended as a universal call to action to eradicate poverty, protect the planet, and ensure peace and prosperity for all.

3. Review of literature

The literature review analyses academic publications, research reports, and case studies on sustainable development strategies in libraries, with a particular focus on academic and university libraries. Sources were compiled from peer-reviewed journals, conference proceedings, and digital platforms such as Google Scholar. The reviewed studies period from 2008 to 2024 and cover global, national, and regional perspectives. The review is organized thematically to address key areas, including the use of digital technologies, library advocacy, integration of Sustainable Development Goals (SDGs) into library services, green library initiatives, and the challenges in implementing sustainable practices. The primary objectives of this review are to map the existing body of knowledge, identify significant research gaps, and establish a foundation for the present study on sustainable development initiatives in university libraries in Karnataka.

1. **Applin (2008)** presented a bibliography intended to assist academic libraries in developing collections that supported sustainability initiatives. The study compiled essential reference materials related to sustainable development and environmental studies. By utilizing databases like Choice Online, the author ensured the relevance of the selected materials. This work reflected the growing commitment of academic institutions to sustainability.

2. **Das (2010)** evaluated the state of library advocacy in India, emphasizing its role in advancing Education for Sustainable Development (ESD). He noted that public libraries often failed to serve underprivileged communities, limiting the effectiveness of ESD efforts. The study highlighted the decline of library advocacy due to weakened leadership and limited civil society involvement. This work underscored the need for strong advocacy to bridge educational and informational divides.

3. **Patil (2018)** highlighted libraries' critical role in promoting environmental sustainability through information dissemination and eco-friendly practices. The study reviewed various green library initiatives and emphasized standards like IGBC and LEED in shaping sustainable library infrastructure. By showcasing successful examples, it demonstrated how small eco-friendly actions could enhance a library's image. This research underscored the transformative potential of libraries in fostering sustainable practices.

4. **Mohammed, Thabit, and Azeez (2019)** investigated the influence of smart libraries on promoting sustainable development practices in the Middle East, focusing on their benefits and establishment factors. With survey data from 295 respondents at the University of Mosul, the study assessed the comparative role of traditional and smart libraries. The findings revealed a high consensus on the positive impact of smart libraries on sustainability, particularly in digital access and resource efficiency. The study emphasized the need to strengthen enabling factors while minimizing interferences to support the combination of smart technologies in libraries.

5. **Prakasan (2020)** examined the importance of libraries in meeting the 17 Sustainable Development Goals (SDGs) during the COVID-19 pandemic. The research illustrated various efforts libraries worldwide employed to respond to pandemic challenges, creating new schemes and long-term strategies. The study highlighted that libraries should play an active role in sustainable development through digital transformation and equitable access to information post-COVID-19. It emphasized the potential of libraries to strengthen their role as community hubs for sustainability.
6. **Khalid, Malik, and Mahmood (2021)** identified challenges faced by libraries in implementing sustainable development initiatives. The authors highlighted issues such as the absence of sustainable strategies and inefficiencies in library operations. They pointed out significant concerns like high energy consumption and resistance to change, which

are involved with long-term sustainability planning. The study emphasized the need for better integration of sustainability into Library and Information Science (LIS) education.

7. **Mannaa and De Sarkar (2022)** conducted a study on sustainable development initiatives in libraries, focusing on green strategies adopted by academic and public libraries worldwide. Through web-based content analysis, they identified key features of green libraries, such as energy-efficient infrastructure and waste management. Their research highlighted successful practices, but also discussed significant challenges, including financial constraints and resistance to change. Despite these challenges, libraries continued to adopt green initiatives, improving their environmental impact.
8. **Serafini et al. (2022)** conducted a systematic literature review on the integration of Sustainable Development Goals (SDGs) in Higher Education Institutions (HEIs). Their study highlighted HEIs as key contributors to the 2030 Agenda, emphasizing their role in fostering social equity, economic viability, and environmental sustainability. Through an analysis of 45 empirical studies, they explored how SDGs were integrated into teaching, research, outreach, and management across various institutions. The findings revealed in collaboration successful initiatives and barriers clogging effective SDG adoption in HEIs, underscoring the need for multi-level coordination within universities.
9. **Choudhury and Kalita (2023)** analysed the management practices of Indigenous Knowledge Resources (IKR) in college libraries of Assam, India. This research identified regional disparities in IKR management, with rural libraries focusing on community engagement while urban libraries prioritized digitization. The study highlighted challenges in IKR preservation, particularly in rural settings, where limited resources delayed sustainability efforts. The authors emphasized the role of academic libraries in promoting social justice and inclusivity through effective IKR stewardship.
10. **Bangani and Dube (2024)** explored the role of academic libraries in South Africa in achieving Sustainable Development Goals (SDGs) 2 (Zero Hunger), 3 (Good Health and Well-being), and 13 (Climate Action) through community engagement initiatives. Using qualitative data from interviews and focus group discussions, the study highlighted how community engagement activities extended beyond traditional library functions. Academic libraries contributed to hunger alleviation, health awareness, and climate advocacy through localized initiatives. The authors recommended that libraries systematically map their community engagement programs against the SDGs to enhance their developmental impact.

11. **Sivalingam and Gamage (2024)** emphasized the global role of university libraries in advancing the United Nations Sustainable Development Goals (SDGs) through integrated strategies and community engagement. Their qualitative study analysed 74 articles, revealing that libraries contributed meaningfully across all SDGs, including areas like sustainable agriculture and biodiversity. The study identified five thematic areas of library contributions: capacity building, access and inclusion, environmental responsibility, innovation, and ethics. While global institutions showed strong alignment with the SDGs, Sri Lankan university libraries lacked formal SDG reporting and required more targeted strategies and collaborations.

Many studies focus on public libraries or cover more general library systems, which leaves a clear lack of knowledge on how university libraries carry out and assess sustainability projects. Moreover, few studies assess librarians' awareness, infrastructure readiness, and policy integration with SDGs. In response to these gaps, the present study, titled *"Sustainable Development Initiatives in the University Libraries in Karnataka: An Evaluative Study,"* seeks to examine the extent, effectiveness, and challenges of sustainability practices in Karnataka's university libraries. The purpose of this study is to contribute to the larger conversation on sustainable librarianship, improve institutional sustainability planning, and offer data-driven insights to guide policy.

4. Need for the study

To support the Sustainable Development Goals (SDGs) of the UN and promote sustainability, university libraries might be extremely important. Research on the implementation of sustainable practices by university libraries in Karnataka through digital transformation, green infrastructure, and user interaction is lacking. As environmental issues and digital dependence develop, it is crucial to assess present practices and library personnel's knowledge levels. Staff training and policy choices can be improved by recognizing the difficulties in adopting sustainability. To evaluate current initiatives, identify any gaps, and provide workable solutions for building academic libraries that are more sustainable and prepared for the future, this research is required.

5. Statement of the problem

Sustainable Development Initiatives in the University Libraries in Karnataka: An Evaluative Study

6. Methodology

This study adopts an evaluative research design to systematically assess the sustainable development initiatives implemented in university libraries across Karnataka. The research aims to explore current practices, measure awareness and engagement levels among librarians and users, evaluate the role of digital resources in promoting sustainability, and identify operational and infrastructural challenges in aligning with the United Nations Sustainable Development Goals (SDGs).

Research Design

A mixed-method approach will be used, combining quantitative and qualitative methods. The quantitative component involves a structured survey, while the qualitative component includes institutional documents analysis and websites. Interviews may be conducted optionally if more detailed insights are needed. This method helps collect both broad and deep information.

Population and Sampling

The study population includes central, state, private, and deemed university libraries in Karnataka. A stratified purposive sampling technique will be used to ensure representation from different types of universities. the librarian from each university and users, which is an inclusion criterion for librarians, required current employment in the university library system, while users were selected based on their consistent usage of library services

Data Collection Methods

- **Questionnaire:** A structured questionnaire will be designed for university librarians, and in addition, users will be chosen from the university.
- **Document Analysis:** Policy documents, annual reports, library websites, and sustainability reports will be examined to understand institutional commitments and initiatives.

- **Interviews:** Semi-structured interviews with key stakeholders (librarians, university administrators) will provide qualitative insights into policy implementation, challenges, and strategic planning.

Tools for Data Collection

Quantitative information on awareness, existing practices, digital usage, and perceptions of sustainability will be gathered from librarians and users via a standardized questionnaire. The questionnaire will undergo expert evaluation and a pilot test to ensure its reliability and clarity. Information will be gathered from government websites, reports, and library policy documents using a document analysis checklist. Semi-structured interview guides will be created, if necessary, in order to gather voluntary qualitative observations from certain administrators or librarians.

Data Analysis

Quantitative data will be analysed using descriptive statistics (percentages, means, standard deviations) and inferential statistics (chi-square test, t-test, or ANOVA, depending on data nature) using SPSS or similar software.

Qualitative data from websites and documents will be analysed using thematic coding and content analysis, allowing identification of recurring themes, best practices, and gaps.

7. Objectives

1. To examine the current status of sustainable development initiatives adopted by university libraries in Karnataka.
2. To assess the level of awareness and involvement of librarians and users in sustainability practices.
3. To evaluate the role of digital resources and ICT infrastructure in supporting sustainability.
4. To identify the challenges faced by university libraries in implementing sustainable practices.
5. To propose strategies and best practices for improving sustainability in university library services.

8. Hypothesis

1. Hypothesis (H_0): There is no significant difference in the level of sustainable development initiatives among different forms of university libraries in Karnataka.
2. Hypothesis (H1): Librarians in Karnataka are significantly aware of sustainability practices and SDGs.
3. Hypothesis (H2): The use of digital resources and ICT infrastructure significantly supports sustainability initiatives in university libraries.
4. Hypothesis (H3): University libraries in Karnataka face significant challenges in implementing sustainable development initiatives.

9. Scope and Limitations of the Study

This research considers Karnataka's university libraries that are accredited by the University Grants Commission (UGC). They include central, state, private, and deemed universities. It seeks to assess initiatives for sustainable development, such as energy consumption, green infrastructure, digital resource management, staff sensitization, and how they align with the Sustainable Development Goals (SDGs). The research does not consider college, school, and public libraries and is based on data gathered from library professionals and institutional records. Due to time and resource constraints, a limited number of university libraries will be researched. The findings may be influenced by what the participants report and the institutional policy, and might not be transferable to other regions or types of libraries.

10. Significance of the Study

This study is important in bringing to the fore how university libraries support sustainable development through their infrastructure, services, and librarians' practices. The research fills a gap in the literature on sustainability initiatives in Indian academic libraries, especially in Karnataka. The findings will inform the formulation of effective strategies for enhancing environmental performance and digital service delivery in libraries. It will be useful to university administration, library professionals, policymakers, and researchers as it will give them a basis for planning and implementing sustainability. In addition, it will promote awareness and institutional action towards the United Nations Sustainable Development Goals (SDGs) and make libraries more active agents of change.

11. Operational definition

1. **Sustainable Development Initiatives (SDIs):** These are purposeful actions by university libraries to promote environmental sustainability, economic efficiency, and social equity. Examples include digitization, adopting green building practices, reducing waste, and providing inclusive services that align with the United Nations Sustainable Development Goals (SDGs).
2. **Sustainability Awareness:** This refers to the level of knowledge, understanding, and sensitivity that library professionals demonstrate regarding sustainable development concepts and practices, as well as the SDGs. We will assess this awareness through responses to questionnaires and insights gathered from interviews.
3. **Green Infrastructure:** This term describes environmentally responsible and resource-efficient practices adopted by libraries. Examples include using energy-efficient lighting, harnessing solar power, constructing green-certified buildings, implementing waste segregation, and establishing water conservation systems.
4. **Sustainable Development Goals (SDGs):** Adopted by the United Nations in 2015, these 17 interlinked goals aim to create a better and more sustainable future by 2030. Our study particularly focuses on SDG 4 (Quality Education), SDG 9 (Innovation and Infrastructure), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action).
5. **Evaluative Study:** This is a systematic investigation designed to assess and critically analyses the planning, implementation, and impact of sustainable development initiatives within university libraries. We will utilize both qualitative and quantitative data in this process.

12.Chapterization

The study is reported in the following 6 chapters

1. **Chapter I:** Introduction will present the background and rationale of the study, providing an overview of sustainable development and the role of academic libraries in promoting the Sustainable Development Goals (SDGs). This chapter will outline the research problem, objectives, hypothesis, research questions, significance of the study, scope and limitations, operational definitions, and the structure of the thesis.

2. **Chapter II:** Review of Literature will examine relevant national and international literature on sustainability in libraries, including green practices, policy frameworks, and the contribution of libraries towards SDGs. It will highlight major trends, identify knowledge gaps, and establish the theoretical foundation of the study.
3. **Chapter III:** Research Design and Methodology will describe the research approach and methods used for data collection and analysis. It will include the research design, sampling techniques, population, data collection tools (such as questionnaires and interviews), methods of study, and ethical considerations. This chapter will also address the reliability and validity of the instruments used.
4. **Chapter IV:** The Overview of Sustainable Development in Academic Libraries. Academic libraries are accepting sustainable development through digital transformation, social inclusion, and environmental responsibility. They support the UN SDGs by ensuring access to information (SDG 4), promoting innovation (SDG 9), and adopting green practices (SDG 13). Key efforts include digitization, energy-efficient infrastructure, and eco-friendly policies. Localized studies are needed to assess and improve these initiatives across regions.
5. **Chapter V:** Data Analysis and Interpretation will present and interpret the data collected from the field. It will analyse the extent of awareness and implementation of sustainable development initiatives among university libraries, the role of library professionals, types of practices adopted, and the challenges faced. The results will be presented using tables, charts, and graphs for clarity.
6. **Chapter VI:** Findings, Suggestions, and Conclusion will summarize the major findings of the study, draw meaningful conclusions, and relate the outcomes to the initial research questions and objectives. It will offer practical suggestions for enhancing sustainable practices in university libraries and provide recommendations for policy development, capacity building, and further research. The chapter will conclude with the research contributions and identified limitations.

13. Conclusions

Sustainable development became a revolutionary framework that leads institutions toward environmental stewardship, digital access, and equitable access to knowledge. University libraries being centres of facts have a crucial role to play in the facilitation of the United Nations Sustainable Development Goals (SDGs), specifically Goal 4 (Quality

Education), Goal 9 (Industry, Innovation, and Infrastructure), Goal 11 (Sustainable Cities and Communities), and Goal 13 (Climate Action) (United Nations, 2015). This study aims to evaluate how far university libraries within Karnataka have integrated and installed sustainable development programs by these international objectives.

This study highlights the extreme importance of bringing about a paradigm shift in how university libraries become sustainable. Through a culture of sustainability, libraries can better promote their position as knowledge centres that not only grant access to information but also directly contribute to the larger cause of the United Nations Sustainable Development Goals (SDGs). The research has made practical recommendations for enhancing awareness, training, and allocation of resources that are critical in empowering library professionals and maximizing the contribution of libraries toward sustainable development.

Through an analysis of existing practices, awareness levels among library professionals, and institutional challenges to the implementation of sustainability initiatives, the study has identified both advancements and ongoing gaps in the system. This study not only informs library development planning in Karnataka but also provides a replicable model for academic libraries in similar contexts around the world. As the world marches toward Agenda 2030, the contribution of university libraries as active stakeholders in sustainable development needs to be acknowledged and promoted. This research hopes to act as a stimulus to ongoing research, policy focus, and institutional investment to make sure that university libraries continue to lead the charge towards sustainability in an ever more complicated educational environment.

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